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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Robert W. Turner

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EXAMINER

MOTSINGER, SEAN T

ART UNIT

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2624

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/721,212	Applicant(s) TURNER ET AL.	
	Examiner SEAN MOTSINGER	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 October 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24,30 and 32-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24,30 and 32-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 February 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to applicants Arguments/Amendments

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/25/2008 has been entered.
2. Applicants amendments with respect to objections to the drawings, objections to the specification, rejections under 35 U.S.C. 112, have cancelled the subject matter which was objected/rejected and therefore these objections/rejections have been overcome.
3. Applicants arguments with respect to the rejections under 35 U.S.C. 103 have been fully considered but are not persuasive. Applicant argues that the feature of "aggregating" in the amended claims is not taught by Lindgren, instead Lindgren allegedly teaches that the MSI images are up sampled and to match the pan chromatic image. Lindgren does teach this feature for the purposes of combining the images. However for the purpose of determining a (spectral) correction factor Lindgren does perform the aggregation of claim 1 (see column 4 lines 40-50). In fact Lindgren does not perform up sampling for spectral correction as alleged by

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applicant, Lindgren instead performs the aggregation process as described in claim 1.

Rejections Under 35 U.S.C. 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 37 is rejected under 35 U.S.C. 102(b) as being anticipated by Lindgren et al 6,097,835.
5. Claim 37 Lindgren discloses spatially matching a plurality of multispectral band images produced by different sensors, (see column 6 lines 2-3 describing spatially overlapping visible light and panchromatic images) and spectrally correcting one or more of the spatially matched images based on one or more of the other images (see column 2 lines 25-29); and extracting first radiometrically stable data values associated with first control points in a first image (see column 4 equation 2 points P0 through Ps-1), extraction second radiometrically stable data values associated with second control points in a second image (see column 4 equation 2 points (m 0,0 through m s-1,0) the second image having a resolution lower than a resolution of the first image (column 3 lines 20-25); forming an aggregated first data value for each of

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the second data values by combining a plurality of the first data values that correspond to each second data value (column 4 lines 40-50), compares the aggregated first data values of the first image to the extracted second data values of the second image (see equation 2 column 4), generates a correction factor based on the comparison (column 4 equation 2), and applying the correction factor to the radiometric data of the second image (column 5 lines 10-15). The means for spatially matching and means for spectrally correcting are defined by the specification as computer software that is executed by a processing system.

Rejections Under 35 U.S.C. 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-2 are rejected under 35 U.S.C. 103 as being anticipated by U.S. Patent No. 6,097,835 issued to Lindgren ("Lindgren") in view of U.S. Patent No. 7,171,912 issued to Fraisse et al. ("Fraisse").

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7. Claim 1 recites “spatially matching a plurality of multispectral band images produced by different sensors, the multispectral band images having different resolution levels.” Lindgren discloses spatially matching a plurality of multispectral band images produced by different sensors, the multispectral band images having different resolution levels (see column 6 lines 2-3 describing spatially overlapping visible light and panchromatic images) and spectrally correcting one or more of the spatially matched images based on one or more of the other images (see column 2 lines 25-29); and extracting first radiometrically stable data values associated with first control points in a first image (see column 4 equation 2 points P_0 through P_{s-1}), extracting second radiometrically stable data values associated with second control points in a second image (see column 4 equation 2 points $(m_{0,0}$ through $m_{s-1,0}$) the second image having a resolution lower than a resolution of the first image (column 3 lines 20-25); forming an aggregated first data value for each of the second data values by combining a plurality of the first data values that correspond to each second data value (column 4 lines 40-50), compares the aggregated first data values of the first image to the extracted second data values of the second image (see equation 2 column 4), generates a correction factor based on the comparison (column 4 equation 2), and applying the correction factor to the radiometric data of the second image (column 5 lines 10-15)
8. Lindgren does not disclose performing at least one of a solar illumination correction and an atmospheric correction on the spatially matched images.

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9. Fraisse discloses performing at least one of a solar illumination correction and an atmospheric correction on the spatially matched images (see column 2 line 47-column 7 line 21).
10. It would have been obvious to one of ordinary skill in the art at the time of the invention to perform the atmospheric correction of Fraisse with the pan sharpening method of Lindgren to increase the image resolution as taught by Fraisse at column 7 lines 19-22.
11. For claim 2, Lindgren discloses equalizing the resolution levels in the images and the means for equalizing the resolution levels (see column 3 lines 40-45).
12. Claim 3 is rejected under 35 U.S.C. 103 as being anticipated by Lindgren in view of Fraisse and U.S. Patent No. 5,995,681 issued to Lee et al. ("Lee").
13. For claim 3, Lindgren and Fraisse disclose the elements of base claims 1 and 2. Lindgren and Fraisse do not explicitly disclose setting a plurality of control points in the images based on landmark information and aligning the images based on the set control points.
14. Lee discloses setting a plurality of control points in the images based on landmark information and aligning the images based on the set control points as shown in Figure 1.

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15. It would have been obvious to one of ordinary skill in this art at the time of this invention to align the panchromatic and multispectral images of Lindgren using the control points obtained from a survey or reference image of the geographical area of interest in order to co-register the images as taught by Lee in columns 1-2 and figure 1.
16. Claims 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindgren in view of Fraise and Lee as applied to claim 3 above, and further in view of U.S. Patent No. 5,864,632 issued to Ogawa et al. ("Ogawa").
17. For claim 4, Lindgren, Fraise and Lee disclose the elements of base claim 3. Lindgren, Fraise and Lee do not explicitly disclose determining locations of a plurality of landmarks, presenting a selected landmark, setting a control point approximately adjacent to the selected landmark, and repeating until a threshold number of control points are set.
18. Ogawa in step 202 of figure 2, figure 7 and column 6 lines 32-38 shows determining locations of a plurality of landmarks, presenting a selected landmark, setting a control point approximately adjacent to the selected landmark, and repeating until a threshold number of control points are set.
19. It would have been obvious to one of ordinary skill in this art at the time of invention to set control points in the images of Lindgren, Fraise and Lee adjacent to

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selected landmarks as shown by Ogawa for the purpose of aligning multiple images of the same geographic location as taught by Ogawa at column 5 lines 33-36.

20. For claims 5-6, Ogawa in figure 7 shows the landmarks include a building and a field. Given the fact that the neither the claims nor the specification establishes a critical distinction between a building and a school building, or a field and a football field, one of ordinary skill in the art would obviously recognize that the building of Ogawa can be a school building and the field can be a football field.

21. For claims 7-8, Lindgren discloses setting the multispectral resolutions to an equalized resolution (see resample to pan resolution figure 1).

22. Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindgren in view of Landsat-7 Science Data User's Handbook solar illumination algorithm ("Landsat-7") cited by applicant on pages 5-7 of the originally filed disclosure. Although the Landsat-7 algorithm does not list a publication date, presumably this is admitted prior art and not an invention by applicants.

23. For claim 9, the means for spatially matching and means for spectrally correcting are defined by the specification as computer software that is executed by a processing system, which is disclosed by Lindgren in the rejection of claim 1 above, and the means for performing solar correction is disclosed by Landsat-7. It would

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have been obvious to one of ordinary skill in the art at the time of invention to perform solar illumination correction on the satellite images of Lindgren for the benefit of reducing between-scene variability.

24. For claim 10, Lindgren discloses equalizing the resolution levels in the images and the means for equalizing the resolution levels (see column 2 lines 29-31).

25. Claim 11 is rejected under 35 U.S.C. 103 as being anticipated by Lindgren in view of Landsat-7 as applied to claims 9-10 above and further in view of U.S. Patent No. 5,995,681 issued to Lee et al. ("Lee").

26. For claim 11, Lindgren and Landsat-7 disclose the elements of base claims 9-10. Lindgren and Landsat-7 do not explicitly disclose setting a plurality of control points in the images based on landmark information and aligning the images based on the set control points.

27. Lee discloses setting a plurality of control points in the images based on landmark information, aligning the images based on the set control points, and aligning images based on latitude and longitude as discussed in column 1 lines 48-50 and shown in Figure 1. It would have been obvious to one of ordinary skill in this art at the time of this invention to align the panchromatic and multispectral images of Lindgren using the latitude, longitude, or control points obtained from a survey or

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reference image of the geographical area of interest in order to co-register the images as taught by Lee in columns 1-2 and figure 1.

28. Claims 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindgren in view of Landsat-7 and Lee as applied to claim 11 above, and further in view of U.S. Patent No. 5,864,632 issued to Ogawa et al. ("Ogawa").

29. For claim 12, Lindgren, Landsat-7 and Lee disclose the elements of base claim 11. Ogawa in step 202 of figure 2, figure 7 and column 6 lines 32-38 shows determining locations of a plurality of landmarks, presenting a selected landmark, means for setting a control point approximately adjacent to the selected landmark, and repeating until a threshold number of control points are set. It would have been obvious to one of ordinary skill in this art at the time of invention to set control points in the images of Lindgren, Landsat-7 and Lee adjacent to selected landmarks as shown by Ogawa for the purpose of aligning multiple images of the same geographic location as taught by Ogawa at column 5 lines 33-36.

30. For claims 13-14, Ogawa in figure 7 shows the landmarks include a building and a field.

31. For claims 15-16, Lindgren discloses setting the multispectral resolutions to an equalized resolution in the abstract and figure 4.

32. Claims 17, 20-21 and 23-24 are rejected under 35 U.S.C. 103 as being unpatentable over Lindgren in view of Landsat-7 and further in view of U.S. Patent No. 5,995,681 issued to Lee et al. ("Lee").
33. For claim 17, Lindgren discloses spectrally correcting one or more of the spatially matched images based on one or more of the other images (see column 2 lines 25-29); and extracting first radiometrically stable data values associated with first control points in a first image (see column 4 equation 2 points P_0 through P_{s-1}), extracting second radiometrically stable data values associated with second control points in a second image (see column 4 equation 2 points $(m_{0,0}$ through $m_{s-1,0}$) the second image having a resolution lower than a resolution of the first image (column 3 lines 20-25); forming an aggregated first data value for each of the second data values by combining a plurality of the first data values that correspond to each second data value (column 4 lines 40-50), compares the aggregated first data values of the first image to the extracted second data values of the second image (see equation 2 column 4), generates a correction factor based on the comparison (column 4 equation 2), and applying the correction factor to the radiometric data of the second image (column 5 lines 10-15) Landsat-7 discloses performing a solar illumination correction. It would have been obvious to one of ordinary skill in the art at the time of invention to perform solar illumination correction on the satellite images of Lindgren for the benefit of reducing between-scene variability.

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34. Lee discloses a system for aligning a plurality of satellite images 12 from different sources (such as airborne or spaceborne camera or radar systems, diagrammatically illustrated at 10 and 11, respectively in Figure 1), user interface device 24, a display device 25, a database for storing landmark information (the workstation 24 stores reference images 29 in its memory), a processor coupled to the user interface device, the display device, and the database, the processor including a first component for instructing the display device to present one of the satellite images based on the stored landmark information, a second component for setting control points in the satellite images based on a signal generated by the user interface, and a third component for aligning the images based on the set control points (see column 1 line 52-column 2 line 10 which discusses a skilled operator at an image processing workstation 24 examine the display 25 of the working digital image 16 to locate ground control points 27. The ground control points are obtained from stored landmark information such as a survey of the area of interest. By clicking on a cursor 31 that has been manually positioned over a control point in the working image, the operator supplies an offset which is compared with the actual coordinates of the ground control point in the reference image 29). It would have been obvious to one of ordinary skill in this art at the time of this invention to align the panchromatic and multispectral images of Lindgren using the control points obtained from a survey or reference image of the geographical area of interest in order to co-register the images as taught by Lee in columns 1-2 and figure 1.

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35. Re claim 20 Lee discloses wherein the user interface device includes a first component for selecting landmark information for the data base (column 1 lines 55-65).
36. Re claim 21 Lee discloses where in the user interface device includes a second component for selecting a control point on a visual feature in the displayed satellite image that is associated with the selected landmark (column 1 lines 55-65)
37. For claim 23, Lindgren discloses setting multispectral bands to equalized resolution levels as shown in Figure 4.
38. For claim 24, Lindgre discloses setting the resolution level to a highest level is shown by Lindgren in Figure 4.
39. Claims 18-19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindgren in view of Landsat-7 and Lee as applied to claim 17 above, and further in view of U.S. Patent No. 5,864,632 issued to Ogawa et al. ("Ogawa").
40. For claim 18, Lindgren, Landsat-7 and Lee disclose the elements of base claim 17. Ogawa in figure 7 discloses the landmark includes a building, which can be a school. It would have been obvious to one of ordinary skill in this art at the time of

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invention to set the control points of Lee using school building information for the purpose of aligning the multiple images of the same geographic location as taught by Ogawa at column 5 lines 33-36. It would have been obvious to one of ordinary skill in this art at the time of invention to set control points in the images of Lindgren, Landsat-7 and Lee adjacent to selected landmarks as shown by Ogawa for the purpose of aligning multiple images of the same geographic location as taught by Ogawa at column 5 lines 33-36.

41. For claim 19 Ogawa discloses that the building information includes location information.
42. For claim 22 Ogawa discloses that the visual feature includes a field, which obviously can be a football field.
43. Claims 30, 32 and 33 are rejected under 35 U.S.C. 103 as being anticipated by Lindgren in view of U.S. Patent No. 5,995,681 issued to Lee et al. ("Lee").
44. For claim 30, Lindgren discloses spatially matching images produced by different sensors (see Lindgren column 6 lines 2-3 describing spatially overlapping multispectral and panchromatic images) spectrally correcting one or more of the spatially matched images (see Lindgren column 2 lines 25-29). and extracting first radio metrically stable data values associated with first control points in a first image (see column 4 equation 2 points P_0 through P_{s-1}), extraction second radiometrically

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stable data values associated with second control points in a second image (see column 4 equation 2 points (m 0,0 through m s-1,0) the second image having a resolution lower than a resolution of the first image (column 3 lines 20-25); forming an aggregated first data value for each of the second data values by combining a plurality of the first data values that correspond to each second data value (column 4 lines 40-50), compares the aggregated first data values of the first image to the extracted second data values of the second image (see equation 2 column 4), generates a correction factor based on the comparison (column 4 equation 2), and applying the correction factor to the radiometric data of the second image (column 5 lines 10-15)

45. Lee discloses setting a plurality of control points in the images based on landmark information and aligning the images based on the set control points as discussed in columns 1 and 2 and shown in Figure 1.
46. It would have been obvious to one of ordinary skill in this art at the time of this invention to align the multispectral images of Lindgren using the control points obtained from a survey or reference image of the geographical area of interest in order to co-register the images as taught by Lee in columns 1-2 and figure 1.
47. For claim 32, Lindgren discloses spatially matching multispectral band images of different resolution levels as shown for example in figures 1 and 4.

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48. For claim 33 Lee discloses setting a plurality of control points in the images based on landmark information and aligning the images based on the set control points as shown in Figure 1.
49. Claims 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindgren in view of Lee as applied to claim 33 above, and further in view of U.S. Patent No. 5,864,632 issued to Ogawa et al. ("Ogawa").
50. For claim 34, Lindgren, and Lee disclose the elements of base claim 33. Lindgren, Fraise and Lee do not explicitly disclose determining locations of a plurality of landmarks, presenting a selected landmark, setting a control point approximately adjacent to the selected landmark, and repeating until a threshold number of control points are set.
51. Ogawa in step 202 of figure 2, figure 7 and column 6 lines 32-38 shows determining locations of a plurality of landmarks, presenting a selected landmark, setting a control point approximately adjacent to the selected landmark, and repeating until a threshold number of control points are set.
52. It would have been obvious to one of ordinary skill in this art at the time of invention to set control points in the images of Lindgren, Fraise and Lee adjacent to selected landmarks as shown by Ogawa for the purpose of aligning multiple images of the same geographic location as taught by Ogawa at column 5 lines 33-36.

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53. For claims 5-6, Ogawa in figure 7 shows the landmarks include a building and a field. Given the fact that the neither the claims nor the specification establishes a critical distinction between a building and a school building, or a field and a football field, one of ordinary skill in the art would obviously recognize that the building of Ogawa can be a school building and the field can be a football field.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SEAN MOTSINGER whose telephone number is (571)270-1237. The examiner can normally be reached on 9-5 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571)272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Motsinger
12/30/2008

/Jingge Wu/

Supervisory Patent Examiner, Art Unit 2624